UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/682,076	07/17/2001	Shantanu V. Kaushikkar	3351.3	2284

			EXAMINER
22886	7590	05/06/2004	EDWARDS, PATRICK L

AFFYMETRIX, INC
ATTN: CHIEF IP COUNSEL, LEGAL DEPT.
3380 CENTRAL EXPRESSWAY
SANTA CLARA, CA 95051

ART UNIT	PAPER NUMBER
2621	

DATE MAILED: 05/06/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) FROM
THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed
  after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any
  earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☐ Responsive to communication(s) filed on _____.
2a) ☐ This action is **FINAL**.   2b) ☒ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is
   closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) <u>1-33</u> is/are pending in the application.
   4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) <u>1-33</u> is/are rejected.
7) ☐ Claim(s) _____ is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) ☒ The specification is objected to by the Examiner.
10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
    a) ☐ All   b) ☐ Some * c) ☐ None of:
    1. ☐ Certified copies of the priority documents have been received.
    2. ☐ Certified copies of the priority documents have been received in Application No. _____.
    3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage
       application from the International Bureau (PCT Rule 17.2(a)).
    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
   Paper No(s)/Mail Date <u>3</u>.

4) ☐ Interview Summary (PTO-413)
   Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Drawings

1.   The twelve sheets of formal drawings received on October 12, 2001 are acceptable.

Specification

2.   The disclosure is objected to because of the following informalities:

The first word of the abstract reads as "45Systems". Although this appears to simply be a typo, it could potentially be a cause of confusion and consequently requires correction.

Appropriate correction is required.

3.   The attempt to incorporate subject matter into this application by reference to the attorney docket number of the application (see page 1 of the specification) is improper and requires correction.

Additionally, any patent applications incorporated into the specification which have subsequently been issued as US patents should be updated as such in the specification.

Claim Rejections - 35 USC § 101

4.   35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

5.   Claim 18 is rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. As currently written, this claim fails to recite any functionally descriptive material. This problem could be easily remedied by amending the preamble of the claim to recite "A computer program, stored on a computer readable medium, comprising:"

Claim Rejections - 35 USC § 102

6.   The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

7.   Claims 1-9, 13-28 and 30-33 are rejected under 35 U.S.C. 102(e) as being anticipated by Shams (USPN 6,349,144).

With regard to claim 1, Shams discloses aligning a grid with a first image (col. 3 lines 57-62 with element 28 of Figure 3a), and generating grid alignment data based on the alignment of the grid with the first image (col. 10 lines 57-59 with elements 74 and 76 of Figure 8). The direction vectors 'd' and 'e' disclosed in Shams are analogous to the grid alignment data recited in the claim. Shams additionally discloses that this data is stored in memory (col. 11 lines 16-18).

Shams further discloses retrieving the grid alignment data responsive to an indication to analyze a second image and analyzing the second image based on the retrieved grid alignment data (col. 11 lines 16-27). The non-control image disclosed in Shams is analogous to the second image recited in the claim. Shams disclosed that the "grid position determined in steps described above" (analogous to the claimed grid alignment data) is applied to this second image. Shams discloses retrieving the grid alignment data from the memory 14 (col. 11 lines 18-19) in response to an indication to analyze a second image.

With regard to claim 18, Shams further discloses a computer program product for performing the above method (col. 5 lines 63-66).

With regard to claim 27, Shams further discloses a scanner (element 130 of Figure 13), for scanning a probe array (col. 5 lines 28-30). The DNA micro-array disclosed in Shams qualifies as a probe array as recited in the claim (per paragraph [0036] of applicant's specification). Shams further discloses scanning a first probe array to generate a first and second image (col. 11 lines 27-30).

With regard to claim 32, all of the limitations of the claim have been discussed in the above arguments.

With regard to claim 33, Shams further discloses generating images by scanning different probe arrays (col. 13 lines 24-26).

With regard to claims 2 and 19, the further limitations of these claims have been discussed in the above arguments. Specifically, the limitations of the claim were addressed with respect to claim 27.

With regard to claims 3 and 20, Shams discloses that the first image is generated by scanning the first probe array with a first excitation beam and the second image is generated by scanning the first probe array with a second excitation beam (col. 11 lines 27-31). The first and second laser frequencies disclosed in Shams are analogous to the first and second excitation beams recited in the claim.

With regard to claims 4 and 21, Shams discloses that the second excitation beam has a second wavelength different from the first wavelength (col. 11 lines 27-31). In the cited passage, Shams discloses excitation beams with different frequencies. Since frequency and wavelength are inversely proportional, it follows that Shams inherently discloses excitation beams with different wavelengths.

With regard to claims 5 and 22, Shams discloses a spotted array (col. 3 lines 15-17).

With regard to claims 6 and 23, Shams discloses a synthesized array (Shams Background).

With regard to claims 7 and 24, Shams discloses receiving one or more user-selected grid aligning parameters (col. 11 lines 24-26). The user-defined translation or transformation disclosed in Shams is analogous to the user-selected grid aligning parameters recited in the claim. Shams further discloses a GUI manager (col. 13 lines 58-62)

With regard to claims 8 and 25, Shams discloses that the user-selected grid aligning parameters include any one or more of the group consisting of a fixed algorithm shape with easy threshold, a fixed algorithm shape with tight threshold, a variable algorithm shape with easy threshold, a variable algorithm shape with tight threshold, or an estimated feature size. For example, Shams discloses an estimated feature size (col. 6 lines 15-35).

With regard to claims 9 and 26, Shams further discloses that the estimated feature size is based on a dimension of a depositing element (col. 5 lines 27-37).

With regard to claim 13, Shams discloses retrieving the grid alignment data responsive to an indication to analyze one or more images in addition to the first and second images, and analyzing each of the one or more additional images based on the retrieved grid alignment data (col. 11 lines 16-26).

With regard to claim 14, Shams discloses receiving a user selection of a number of images to scan, and scanning the user-selected number of images (col. 11 lines 22-23).

With regard to claim 15, Shams discloses receiving a user selection of one or more parameters for scanning (col. 11 lines 27-31). The particular laser frequency disclosed in Shams qualifies as a scanning parameter as recited in the claim.

With regard to claim 16, Shams discloses The one or more parameters for scanning include a gain for one or more of the user-selected number of images (col. 11 lines 27-31). Shams discloses a user-selected scanning frequency. Since the gain of a scanned image is a function of the scanning frequency, it follows that Shams inherently discloses receiving a user-selection for image gain.

With regard to claim 17, Shams discloses that the one or more parameters for scanning include an indicator of an excitation source for one or more of the user-selected number of images (col. 11 lines 27-31). This limitation

is inherently taught by the Shams disclosure in that any scanner inherently includes an indicator of its excitation source.

With regard to claim 28, Shams further discloses sequential scanning (col. 11 lines 16-40).

With regard to claim 30, Shams further discloses that the user inputs the number of images to scan (col. 11 lines 16-40). Shams also discloses a GUI manager (col. 13 lines 58-62).

With regard to claim 31, Shams further discloses that the user-selected number of images to scan is greater than two, and the multiple scan alignment controller retrieves the grid alignment data responsive to an indication to analyze one or more images and the image analyzer analyzes at least one of the one or more additional images based on the retrieved grid alignment data (col. 11 lines 16-30).

Claim Rejections - 35 USC § 103

8.   Claims 10-12 and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shams as applied to claims 1 and 27 above, and further in view of Ramm et al. (USPN 6,345,115). The arguments as to the relevance of Shams as applied above are incorporated herein.

With regard to claims 10, 12 and 29, Shams fails to expressly disclose scanning both the first and second images before aligning the first image with a grid. It follows that Shams also fails to expressly disclose capturing the two images in parallel with two excitation beams.

Ramm, however, discloses scanning in a first and second image before aligning the first image with a grid (Ramm Figure 8 with col. 20 line 37 – col. 21 line 48). Ramm further discloses capturing two images in parallel with two excitation beams (col. 3 lines 26-43). It would have been obvious to one reasonably skilled in the art at the time of the invention to modify Sham's image processing method by scanning the first and second images in parallel with two excitation beams before the first image is aligned with a grid as taught by Ramm. Such a modification would have allowed for a highly efficient method (Ramm col. 12 lines 60-65).

With regard to claim 11, Shams discloses that the first and second images are scanned sequentially (col. 11 lines 16-50).

Conclusion

9.   The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.
Sako (USPN 6,157,700)
Gilchrist et al. (USPN 5,916,747)
Barnard (USPN 5,604,819).

10.   Any inquiry concerning this communication or earlier communications from the examiner should be directed to Patrick L Edwards whose telephone number is (703) 305-6301. The examiner can normally be reached on 8:30am - 5:00pm M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Leo Boudreau can be reached on (703) 305-4706. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Patrick Lynn Edwards   Art Unit 2621

ple

BRIAN WERNER
PRIMARY EXAMINER